

REMARKS

Please note, because of inconsistencies in the previously submitted office action, the Examiner provided a new office action wherein it was agreed that a response was due March 2, 2005 (see Examiner Interview Summary of March 2, 2005). Consequently, a first month extension fee is included with this response.

Claims 51-53 and 91 are canceled. New dependent claims 99-101 are added. The new dependent claims 99-100 recite the same limitations as previous claims 52-53 and 91 which are now cancelled, and therefore, no new matter is added.

Claims 62-75, 80, 81, 87 and 93-98 are allowed.

Claim 90 is objected to and would be allowable if rewritten in independent form and including limitations of intervening claims.

Claims 51-53 and 91 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 51-53 and 91 are canceled rendering this rejection moot.

Claim 88 stands rejected under 35 U.S.C. §102(b) as being anticipated by NEC Corp. (JP5251463) or by Gilmer et al., 5,840,610. Claims 51, 52 and 89 stand rejected under 35 U.S.C. §103(a) as being unpatentable over NEC Corp. or Gilmer et al. in combination with Gardner et al.

Regarding the rejections against independent claim 88, claim 88 recites providing fluorine within the gate oxide layer, and **forming a gate** proximate the gate oxide layer having the fluorine therein **after the providing**. Accordingly, the invention of claim 88 is directed to forming the gate **after the providing of the fluorine**. However, NEC Corp. teaches to form a gate before providing fluorine in a gate oxide layer and Gilmore does not teach forming a gate after providing fluorine. Consequently, neither reference teaches the above recited limitation of claim 88, and therefore, claim 88 is allowable over these references.

For example, NEC Corp. teaches forming a gate electrode 4 (para. 0006; Fig. 2(b)), then forming n- layer 6 (LDD layer) (para. 0007; Fig. 3(a)), and then the n-layer 6 is heated in a fluorine environment which provides fluorine in a oxide film at the interface with the substrate (paras. 0012-0013). That is, NEC Corp. teaches the gate is formed before the providing of fluorine in the gate oxide, and therefore, it is inconceivable that NEC Corp. teaches the above recited limitation of claim 88. Claim 88 is allowable over NEC Corp.

Regarding the rejection against claim 88 based upon Gilmore, Gilmore first teaches a step 130 (Fig. 1) provides fluorine in a silicon substrate, *but not in an oxide layer* (col. 5, lns. 1-10), then an oxide layer is formed in steps 150 and 160 (shown as gate dielectric 204 in Fig. 2) (Fig. 1; col. 5, lns. 10-20), and then a gate is formed in step 180 (Fig. 1; col. 5, lns. 50-55), without any further discussion of the fluorine. The next time fluorine is discussed, Gilmore teaches

a sheet of fluorine exists in a gate dielectric 204, as shown in Fig. 2, **without teaching when or how** the fluorine was provided in the gate dielectric 204 (col. 6, Ins. 48-55; Fig. 2). That is, Gilmore provides no teaching of fluorine provided in the gate dielectric 204 before the forming of the gate. Accordingly, Gilmore fails to teach the above recited limitation of claim 88. Claim 88 is allowable over Gilmore.

Since neither NEC Corp. nor Gilmore, singularly or in any combination, teach or suggest providing fluorine within the gate oxide layer, and **forming a gate** proximate the gate oxide layer having the fluorine therein **after the providing** as positively recited in claim 88, claim 88 is allowable.

Claims 89-90 and 99-100 depend from independent claim 88, and therefore, are allowable for the reasons discussed above with respect to the independent claim, as well as for their own recited features which are not shown or taught by the art of record.

For example, claims 89 and 100 (previously claim 52) are rejected as being obvious over the combination of NEC Corp. and Gardner, and/or the combination of Gilmer and Gardner. The Examiner correctly states NEC Corp. and Gilmer fail to teach spacers comprising fluorine and relies on Gardner to provide the deficiency in teachings (presumably referring to claim 89) (pg. 3 of office action). The stated motivational rationale for combining Gardner with the respective primary references is that it is obvious to provide spacers with fluorine

to reduce the susceptibility of a semiconductor device to hot carrier injection of electrons into a gate electrode and gate oxide. However, the primary references already teach to provide fluorine for reducing the susceptibility of hot carriers without the use of spacers (see Gilmer at col. 6, Ins. 45-60 and NEC Corp. at paras. 0009 and 0013). Consequently, to provide Gardner for modifying the inventions of Gilmer and NEC Corp. respectively is redundant, and therefore, there is no motivational rationale for modifying the inventions of Gilmer and NEC Corp. because no benefit or advantage is gained. Therefore, one skilled in the art would not be motivated to modify the inventions of Gilmer and NEC Corp. with the redundant teachings of Gardner. The Examiner is reminded that to establish a *prima facie* case of obviousness, there must be some **suggestion or motivation**, the desirability, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. MPEP §§2142, 2143 (8th Ed., revision no. 2) (emphasis added). Since the Examiner has failed to provide the desirability or motivational rationale for modifying the inventions of Gilmer and NEC Corp. by Gardner, the obviousness rejection must fail.

Moreover, presumably referring to claim 100 (previously claim 52), the Examiner correctly states the references do not teach the concentrations recited, but that the Applicant has the burden of proving the "criticality" of the concentrations (pg. 4) because it is not inventive to discover optimum or

workable ranges by routine experimentation, and recites to the alleged legal precedent of *In re Aller*, 105 U.S.P.Q. CCPA (1955). The Examiner is in effect improperly stating that the Applicant must first come forward with evidence of nonobviousness or patentability of such limitations before the Examiner comes forward with a *prima facie* case of obviousness. The Examiner is respectfully reminded that the legal concept of *prima facie* obviousness is a procedural tool of examination and allocates who has the burden of going forward with production of evidence in each step of the examination process. MPEP §2142 (8th ed., revision no. 2). MPEP §§2142 and 2143 address this legal concept extensively. The **examiner bears the initial burden** of factually supporting any *prima facie* conclusion of obviousness, that is, “the initial burden is on the examiner **to provide some suggestion of the desirability of doing what the inventor has done.**” MPEP §2142 (8th ed., revision no. 2) (emphasis added). If the examiner does not produce a *prima facie* case, the Applicant is under no obligation to submit evidence of nonobviousness. MPEP §2142 (8th Ed., revision no. 2) (emphasis added). Pursuant to this authority, since the Examiner has not produced a *prima facie* case of obviousness, the Applicant is under no obligation to submit evidence of nonobviousness, and therefore, the obviousness rejections are improper and must be withdrawn.


Moreover, regarding the alleged holding of *In re Aller*, the doctrine of this case is now held in disfavor. The *In re Yates* court stated, “The problem,

however, with such 'rules of patentability' (and the ever-lengthening list of exceptions which they engender) is that they tend to becloud the ultimate legal issue—obviousness—and exalt the formal exercise of squeezing new factual situations into preestablished pigeonholes. Additionally, **the emphasis upon routine experimentation is contrary to the last sentence of section 103".** *In re Yates*, 663 F.2d 1054, 211 USPQ 1149, 1151 n.4 (CCPA 1981) (emphasis added). Consequently, Applicant submits the obviousness rejections are improper and should be withdrawn.

This application is now believed to be in immediate condition for allowance, and action to that end is respectfully requested. If the Examiner's next anticipated action is to be anything other than a Notice of Allowance, the undersigned respectfully requests a telephone interview prior to issuance of any such subsequent action.

Respectfully submitted,

Dated: 4-4-05

By: 
D. Brent Kenady
Reg. No. 40,045